
Growing an Urban
Riparian Program
City of Austin
city of austin
Watershed Protection
CITY OF AUSTIN
FOUNDED 1839
Austin
Parks and
Recreation

Urban Stream Syndrome (Walsh et al. 2005)

Erosion

Water Quantity

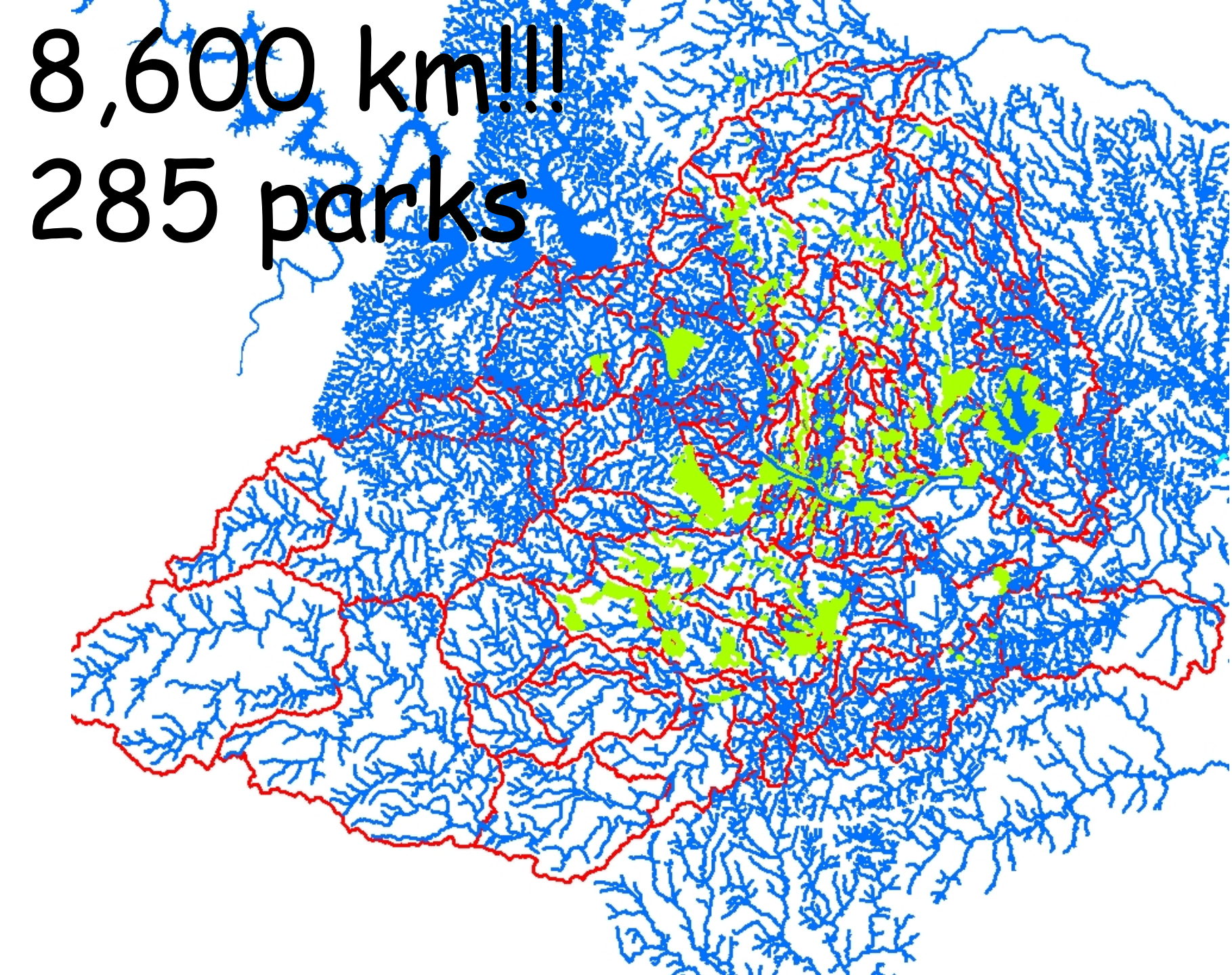
Water Quality

Building Blocks

- Mature monitoring program
- Stream restoration superstars
- Strong education/outreach group
- Green council/citizenry
- Water quality priority

Healthy Riparian Buffers

- Increase Water Storage
  - baseflow
- Improve Water Quality
  - Filter, shade, food web
- Minimize Erosion
  - Anchor soils, reduce velocities

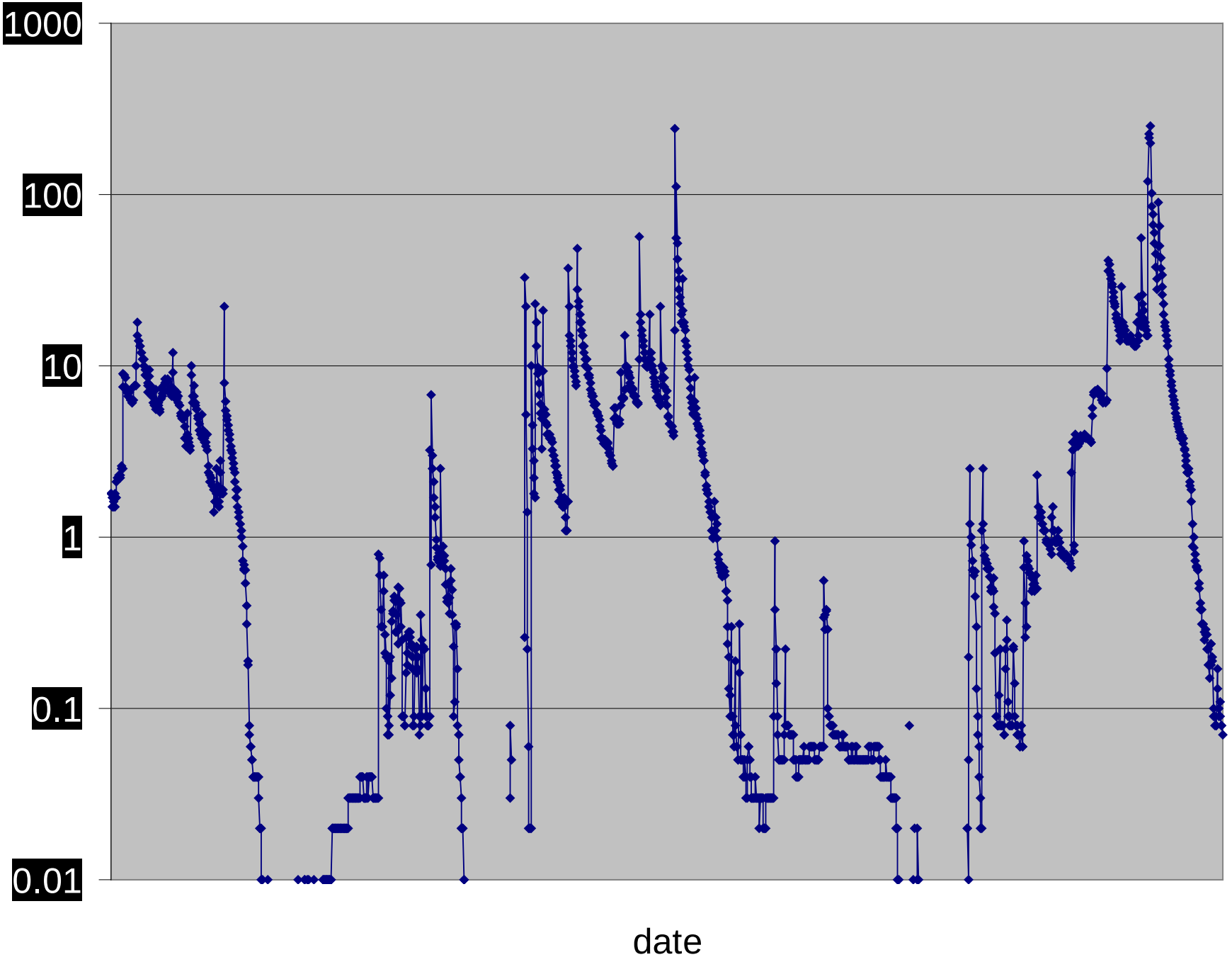

8,600 km!!!
285 parks

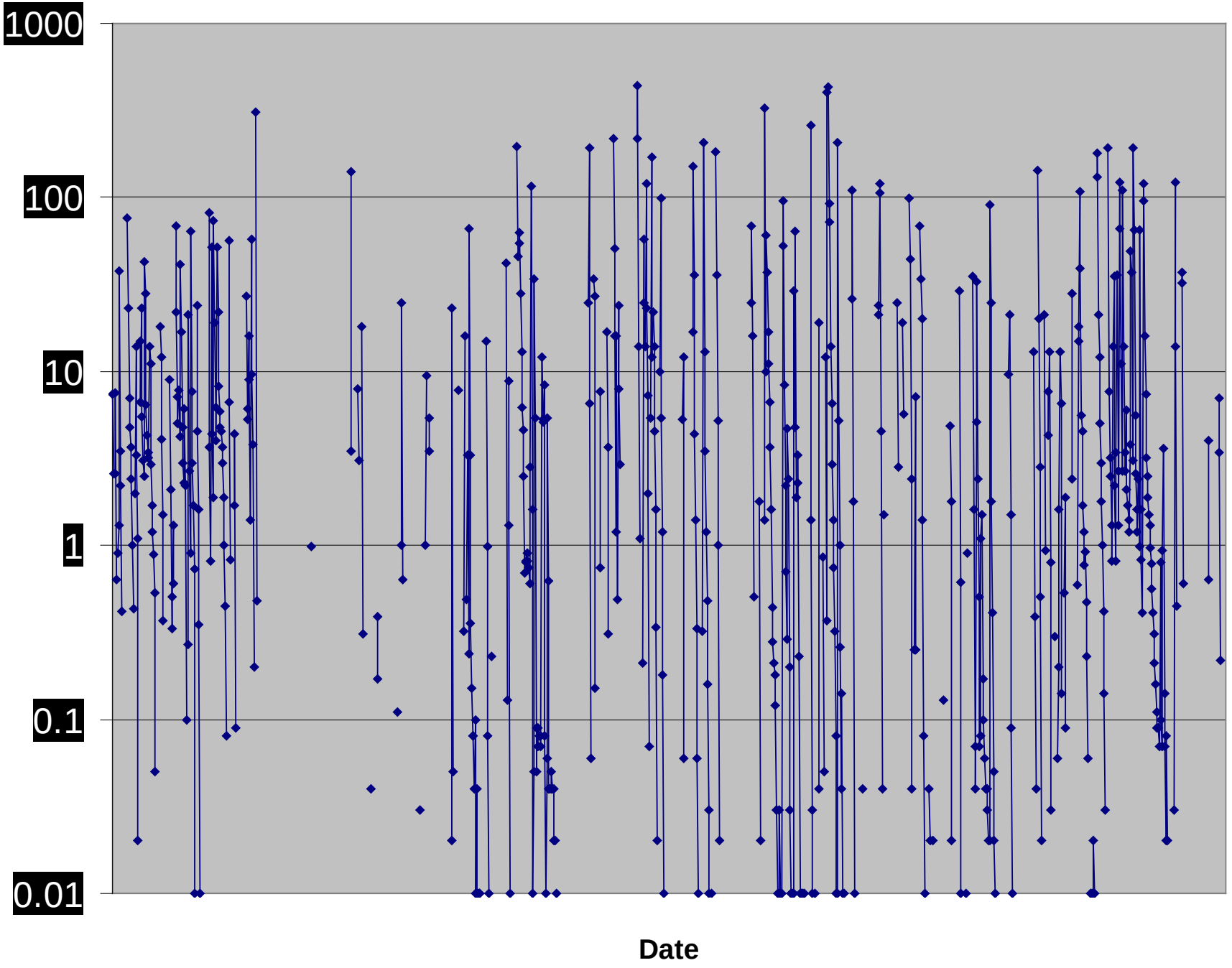
Restoration 101

- Grow Zones
- Willowbrook
- Monitoring
- Prioritization
- Partners
- Rescue Nursery
- Stormwater…

Why?

IMPERVIOUS SURFACES IN AUSTIN, TX


1000
100
10
1
0.1
0.01
date


1000
100
10
1
0.1
0.01
Date

Low Impact Retrofit: small, soft and everywhere

- Disconnect impervious cover.
- Slow, store and infiltrate stormflow.
- Smaller drainage areas
- Headwaters
- Fast and affordable
- Function over form, not landscaping.
- Monitor and manage vegetative succession.
- Perennial, deep-rooted veg (infiltration!)

Basic Tools (so far):

RAIN GARDENS

A rain garden is a shallow, vegetated depression designed to absorb and filter runoff from impervious surfaces. They can be highly manicured and landscaped or planted as ephemeral wet habitat.

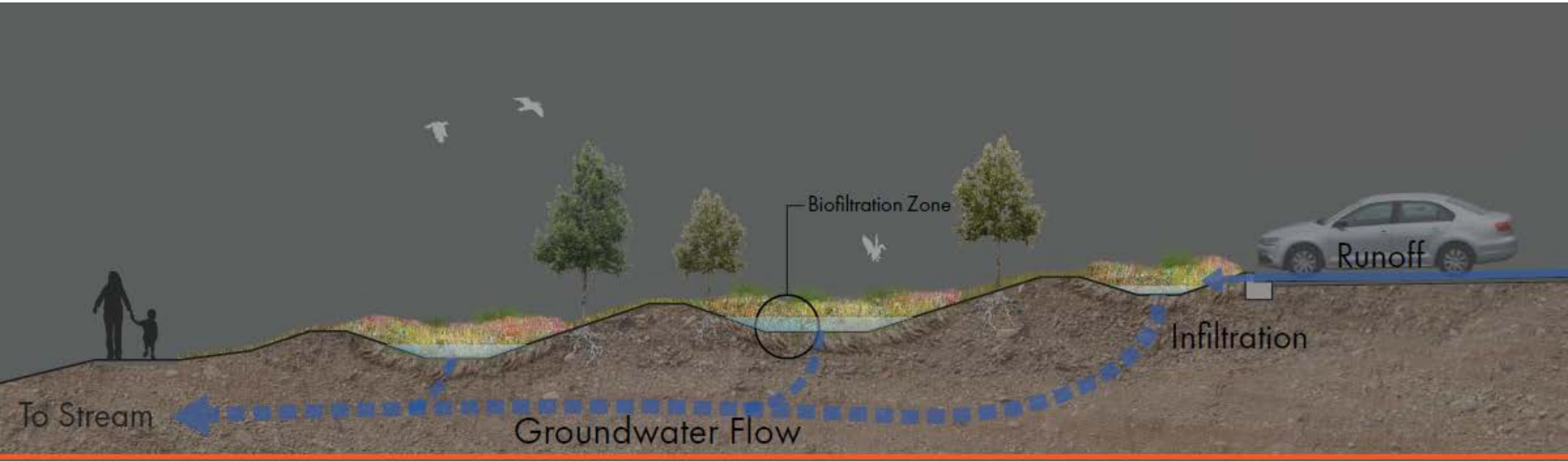
BERMS AND SMILES

A berm (smile) is a low, raised landscape feature that collects water behind itself, much like a dam. Ideal for slopes, smiles stop water from eroding the hillside and carrying away precious topsoil.

SWALES

Swales are shallow linear depressions that can collect and carry water. When placed at the bottom of a slope, a vegetated swale can filter and infiltrate water sheet flowing down the hill.

Dottie Jordon Rain Garden

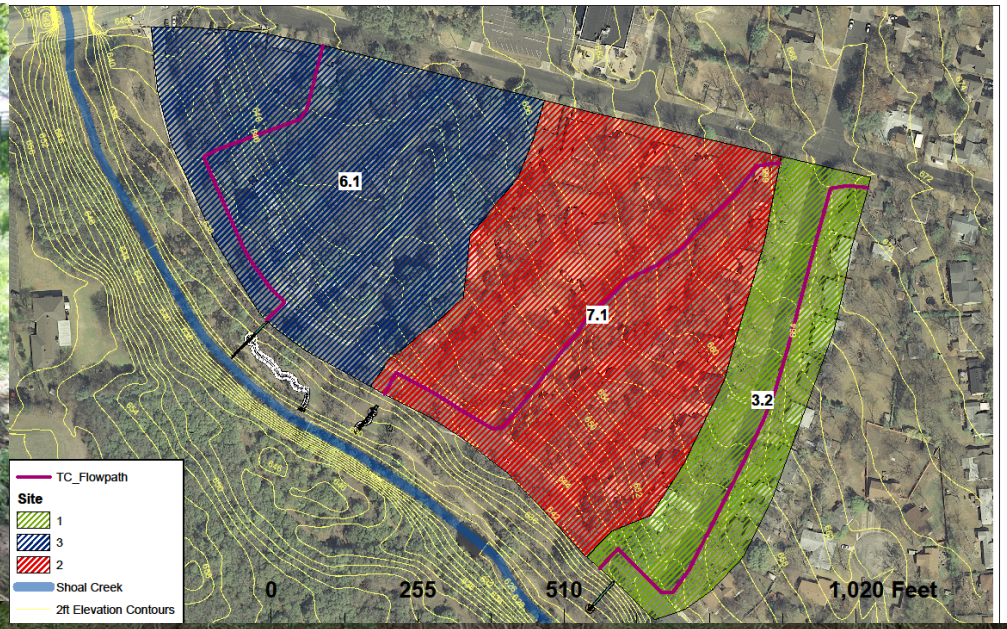


BRINGING IT TOGETHER

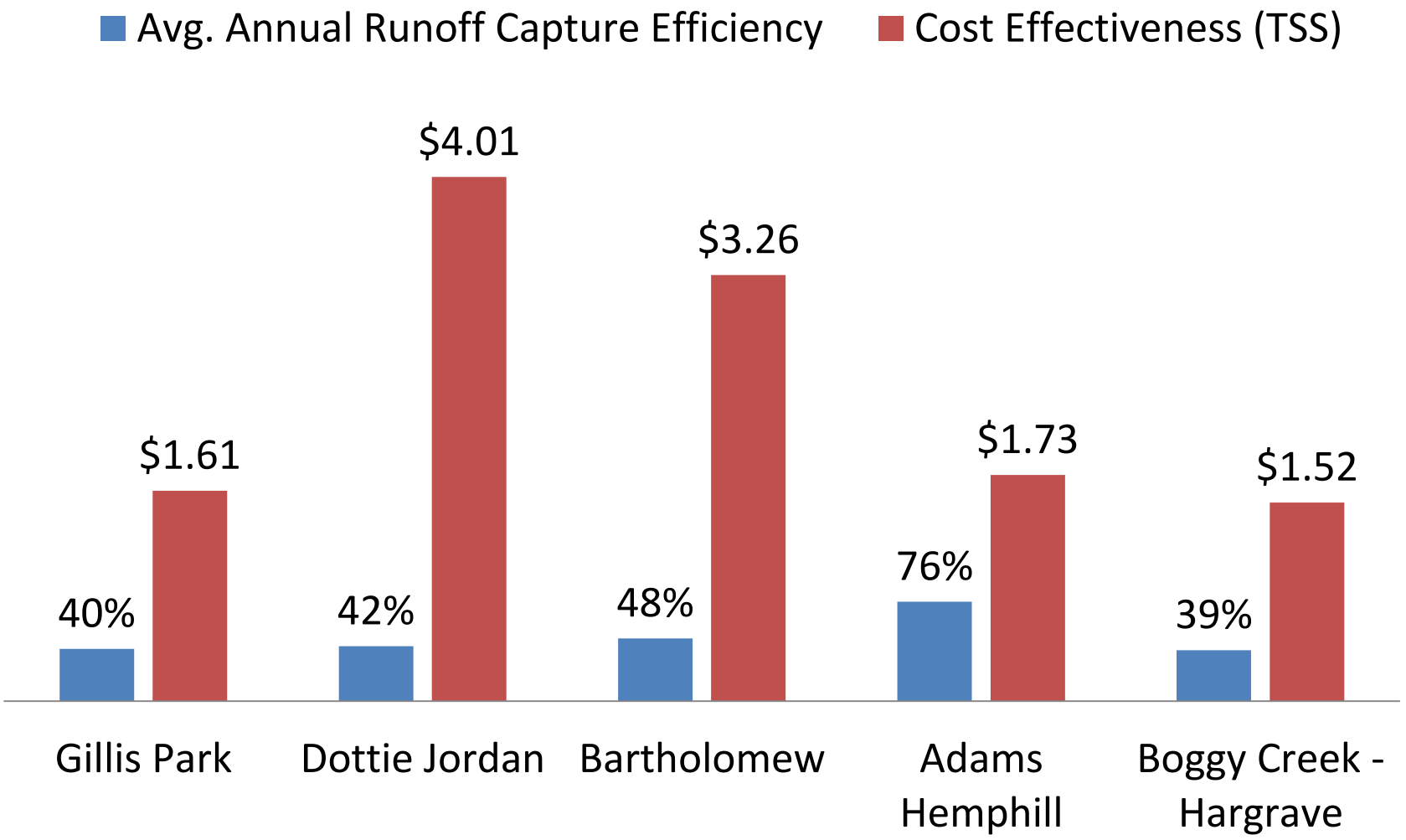
At Dottie Jordan Recreation Center, the terraced rain gardens allow for water to infiltrate along the entire slope where it can eventually make its way to the stream. This one system alone can infiltrate 153,943 gallons of rain water every year, which is ~42% of the water that falls on the parking lot.

Bartholomew Splash Pad Garden

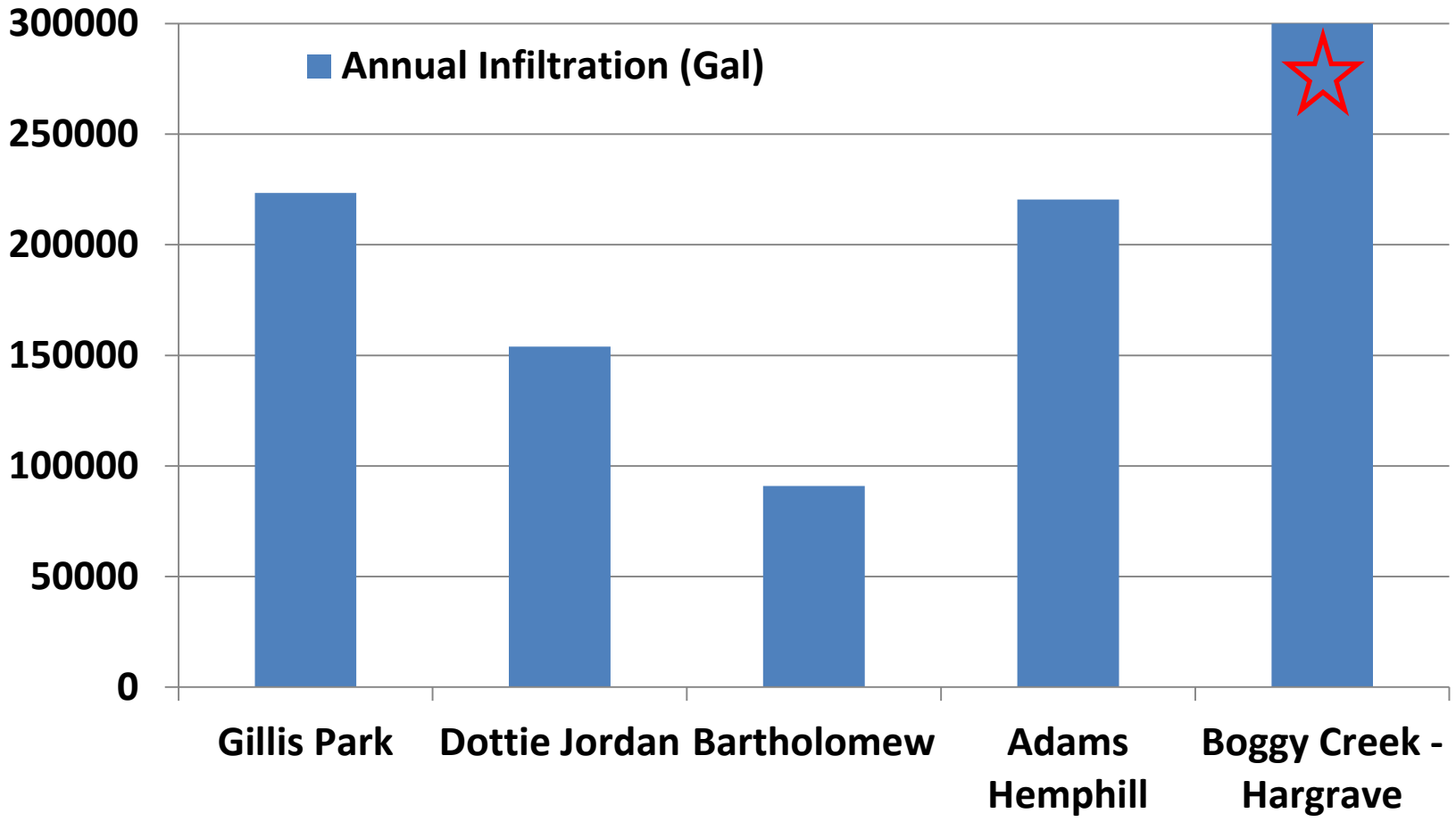
Shoal @ Allandale Bioswales



Performance



Performance



Value and Co-Benefits

- Water quality, erosion and flood benefits.
- Infinitely expandable/scalable.
- Wide range of partners: internal and external.
- Volunteers! Stakeholder buy-in!
- Educational/local support
- Climate change adaptation/resilience

Next Steps

- Demonstrate method, costs, performance.
- Sub-shed scale modeling
- Sub-shed scale pilot (Insitu!).
- Push for an in-house crew to expand/mature program


Questions?

Performance

- N=5 Rain Gardens
- DA, 0.5 – 11.3 acres
- WQ volume, 322 – 3800 cubic ft (2.4k-30K gal)
- Cost, $8k - $45K
- Avg annual infiltration, 3.5 – 11.5 inches

Performance

Site Name	Drainage Area (ac)	Impervious cover %	WQV (cu.ft.)	Avg. Annual Runoff Capture Efficiency	Avg. Annual Runoff Volume Captured and Infiltrated	Avg. Annual TSS Load Removed (lb/yr)	Est. Cost	Cost Effectiveness (TSS)	Cost effectiveness (infiltrated cu.ft.)	Cost effectiveness (Cost/WQV)
Gillis Park	0.9	84%	586	40%	9.17	317	$10,282	$1.61	$0.02	$17.55
Dottie Jordan	0.503	95%	521	42%	11.27	218	$19,000	$4.01	$0.04	$36.47
Bartholomew	1.045	30%	322	48%	3.2	129	$8,000	$3.26	$0.03	$24.84
Adams Hemphill	1.55	31%	1,802	76%	5.23	313	$11,000	$1.73	$0.02	$6.10
Hargrave	11.32	41%	3,865	39%	3.62	1,578	$45,000	$1.52	$0.02	$11.64